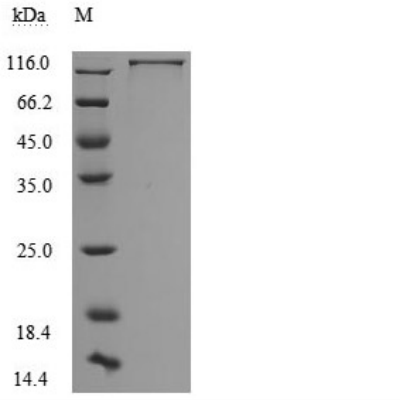
Recombinant Human Neural cell adhesion molecule L1 (L1CAM), partial (Active)

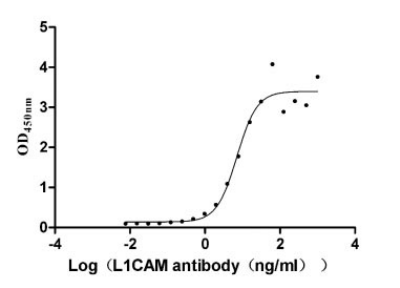
Product Code	CSB-MP012704HU1
Abbreviation	Recombinant Human L1CAM protein, partial (Active)
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	P32004
Form	Lyophilized powder
Storage Buffer	Lyophilized from a 0.2 μm filtered 20 mM Tris-HCl, 0.5 M NaCl, 6% Trehalose, pH 8.0
Product Type	Recombinant Protein
Immunogen Species	Homo sapiens (Human)
Biological Activity	Measured by its binding ability in a functional ELISA. Immobilized L1CAM at 2 μg/ml can bind Anti-L1CAM Rabbit Monoclonal Antibody (CSB-RA595071A0HU), the EC_{50} is 5.384-9.380 ng/ml.
Purity	Greater than 95% as determined by SDS-PAGE.
Sequence	IQIPEEYEGHHVMEPPVITEQSPRRLVVFPTDDISLKCEASGKPEVQFRWTRD GVHFKPKEELGVTVYQSPHSGSFTITGNNSNFAQRFQGIYRCFASNKLGTAMS HEIRLMAEGAPKWPKETVKPVEVEEGESVVLPCNPPPSAEPLRIYWMNSKILHI KQDERVTMGQNGNLYFANVLTSDNHSDYICHAHFPGTRTIIQKEPIDLRVKATN SMIDRKPRLLFPTNSSSHLVALQGQPLVLECIAEGFPTPTIKWLRPSGPMPADR VTYQNHNKTLQLLKVGEEDDGEYRCLAENSLGSARHAYYVTVEAAPYWLHKP QSHLYGPGETARLDCQVQGRPQPEVTWRINGIPVEELAKDQKYRIQRGALILS NVQPSDTMVTQCEARNRHGLLLANAYIYVVQLPAKILTADNQTYMAVQGSTAY LLCKAFGAPVPSVQWLDEDGTTVLQDERFFPYANGTLGIRDLQANDTGRYFCL AANDQNNVTIMANLKVKDATQITQGPRSTIEKKGSRVTFTCQASFDPSLQPSIT WRGDGRDLQELGDSDKYFIEDGRLVIHSLDYSDQGNYSCVASTELDVVESRA QLLVVGSPGPVPRLVLSDLHLLTQSQVRVSWSPAEDHNAPIEKYDIEFEDKEM APEKWYSLGKVPGNQTSTTLKLSPYVHYTFRVTAINKYGPGEPSPVSETVVTP EAAPEKNPVDVKGEGNETTNMVITWKPLRWMDWNAPQVQYRVQWRPQGTR GPWQEQIVSDPFLVVSNTSTFVPYEIKVQAVNSQGKGPEPQVTIGYSGEDYPQ AIPELEGIEILNSSAVLVKWRPVDLAQVKGHLRGYNVTYWREGSQRKHSKRHI HKDHVVVPANTTSVILSGLRPYSSYHLEVQAFNGRGSGPASEFTFSTPEGVPG HPEALHLECQSNTSLLLRWQPPLSHNGVLTGYVLSYHPLDEGGKGQLSFNLR DPELRTHNLTDLSPHLRYRFQLQATTKEGPGEAIVREGGTMALSGISDFGNISA TAGENYSVVSWVPKEGQCNFRFHILFKALGEEKGGASLSPQYVSYNQSSYTQ WDLQPDTDYEIHLFKERMFRHQMAVKTNGTGRVRLPPAGFATE
Source	Mammalian cell

Target Names	L1CAM
Expression Region	20-1120aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 10xHis-tagged and C-terminal Myc-tagged
Mol. Weight	128.2 kDa
Protein Length	Partial

Image



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.



Activity
Measured by its binding ability in a functional ELISA. Immobilized L1CAM at 2 μg/ml can bind Anti-L1CAM Rabbit Monoclonal Antibody (CSB-RA595071A0HU), the EC_{50} is 5.384-9.380 ng/ml.

Description

The recombinant human L1CAM protein, covering amino acids 20-1120, is generated using mammalian cell expression of a plasmid with an N-terminal 10xHis-tag gene sequence and C-terminal Myc-tag gene. This plasmid is constructed by cloning the gene fragment that encodes the 20-1120aa of human L1CAM. This L1CAM protein's purity exceeds 95% as measured by SDS-PAGE, and the LAL assay determines its endotoxin levels below 1.0 EU/μg. The L1CAM protein's functional activity is validated by ELISA, binding specifically to the L1CAM rabbit monoclonal antibody (CSB-RA595071A0HU), with an EC_{50} range of 5.384 to 9.380 ng/mL.

Human L1CAM is a significant transmembrane glycoprotein belonging to the immunoglobulin superfamily, primarily recognized for its critical roles in neuronal development and its implications in various cancers. Structurally, L1CAM is characterized by six immunoglobulin-like domains and five fibronectin type III repeats, which facilitate both homophilic and heterophilic interactions with other proteins, including integrins and various extracellular matrix components [1]. These interactions are essential for processes such as neurite outgrowth,

neuronal migration, and axon fasciculation [2].

In the context of cancer, L1CAM is involved in tumor progression and metastasis. Its overexpression is frequently associated with poor prognosis across multiple cancer types, including ovarian, gastric, and colorectal cancers [3][4]. Studies have demonstrated that L1CAM enhances cell proliferation, migration, and invasion, thereby promoting aggressive tumor behavior [3][5]. The mechanism underlying this phenomenon involves the activation of signaling pathways, such as the PI3K pathway, which is crucial for cell survival and motility [3]. Furthermore, L1CAM's role in epithelial-mesenchymal transition (EMT) highlights its contribution to the invasive characteristics of tumors [6].

Research has indicated that targeting L1CAM with specific antibodies can significantly reduce metastasis in preclinical models, suggesting its utility in anti-cancer therapies [5]. Additionally, the presence of L1CAM in various tumor microenvironments has been linked to enhanced tumor cell survival and increased metastatic potential, making it a focal point for developing novel therapeutic strategies [4]. Moreover, L1CAM mutations have been implicated in genetic disorders, particularly in the context of L1 syndrome, which is characterized by neurological deficits and structural brain anomalies [7][8]. These mutations can disrupt the normal function of L1CAM, leading to significant developmental issues.

References:

[1] H. Kiefel, S. Bondong, N. Erbe-Hoffmann, J. Hazin, S. Riedle, J. Wolf, et al. L1cam–integrin interaction induces constitutive nf-κb activation in pancreatic adenocarcinoma cells by enhancing il-1β expression, Oncogene, vol. 29, no. 34, p. 4766-4778, 2010. https://doi.org/10.1038/onc.2010.230
[2] G. Moya, R. Michaelis, L. Holloway, & J. Sánchez. Prenatal diagnosis of l1 cell adhesion molecule mutations, Fetal Diagnosis and Therapy, vol. 17, no. 2, p. 115-119, 2002. https://doi.org/10.1159/000048020
[3] D. Chen, Z. Zeng, J. Yang, C. Ren, D. Wang, W. Wu, et al. L1cam promotes tumor progression and metastasis and is an independent unfavorable prognostic factor in gastric cancer, Journal of Hematology & Oncology, vol. 6, no. 1, 2013. https://doi.org/10.1186/1756-8722-6-43
[4] D. Cave, X. Hernando?Momblona, M. Sevillano, G. Minchiotti, & E. Lonardo. Nodal-induced l1cam/cxcr4 subpopulation sustains tumor growth and metastasis in colorectal cancer derived organoids, Theranostics, vol. 11, no. 12, p. 5686-5699, 2021. https://doi.org/10.7150/thno.54027
[5] A. Ernst, A. Putscher, T. Samatov, A. Suling, V. Galatenko, M. Shkurnikov, et al. Knockdown of l1cam significantly reduces metastasis in a xenograft model of human melanoma: l1cam is a potential target for anti-melanoma therapy, Plos One, vol. 13, no. 2, p. e0192525, 2018. https://doi.org/10.1371/journal.pone.0192525
[6] C. Flaviana. L1cam expression in human gastrointestinal tract development: from tongue to colon-rectum, Journal of Public Health Research, vol. 12, no. 2, 2023. https://doi.org/10.1177/22799036231165624
[7] W. Christaller, Y. Vos, S. Gebré-Medhin, R. Hofstra, & M. Schäfer. L1 syndrome diagnosis complemented with functional analysis of L1CAM variants located to the two N-terminal Ig-like domains, Clinical Genetics, vol. 91, no. 1, p.

115-120, 2016. https://doi.org/10.1111/cge.12763
[8] M. Marx, S. Diestel, M. Bozon, L. Keglowich, N. Drouot, E. Bouché, et al. Pathomechanistic characterization of two exonic l1cam variants located in trans in an obligate carrier of x-linked hydrocephalus, Neurogenetics, vol. 13, no. 1, p. 49-59, 2012. https://doi.org/10.1007/s10048-011-0307-4

Endotoxin	Less than 1.0 EU/ug as determined by LAL method.
Reconstitution	We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.
Shelf Life	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.